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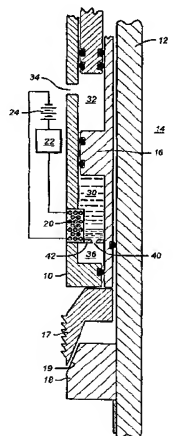
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(54) Abstract Title: **Downhole actuation system utilizing electroactive fluids**

(57) Downhole wellbore tools (14) are actuated by electrically controllable fluids energized by a magnetic field for example. When energized, the viscosity state of the fluid may be increased by a degree depending on the fluid formulation. Reduction of the controllable fluid viscosity by terminating a magnetic field acting upon the fluid may permit in situ wellbore pressure to display a tool actuating piston (16). Displacement of the tool actuating piston (16) is prevented by the controllable fluid in a viscous state. The viscous state of the fluid is energized by a magnetic field environment. When the field is de-energized, the controllable fluid viscosity quickly falls thereby permitting the fluid to flow through an open orifice (40) into a low pressure receiving volume (36). In an alternative embodiment of the invention, an expandable volume fluid may be used against a slip actuating element in the same manner as a fluid pressure motor. A magnetic field, aligned to act upon the controllable fluid, causes the fluid to volumetrically expand and thereby display a slip actuating piston.



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